

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KELLY MOLENAAR

Appeal 2007-1792
Application 10/050,834¹
Technology Center 3600

Decided: July 5, 2007

Before FRED E. MCKELVEY, Senior *Administrative Patent Judge*, and TERRY J. OWENS, and DAVID B. WALKER, *Administrative Patent Judges*.

WALKER, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The real party in interest is Howe Racing Enterprises of Beaverton, Michigan.

STATEMENT OF THE CASE

Kelly Molenaar (“Appellant”) seeks our review under 35 U.S.C. § 134 of the Examiner’s final rejection of claims 1, 4, and 8. We have jurisdiction under 35 U.S.C. § 6(b) (2002). We affirm.

THE INVENTION

Appellant claims a performance ball and joint system that provides the ability to quickly and easily replace or change the ball and shaft rather than replacing the entire ball joint (Specification 1:7-15). Claims 1, 4, and 8, reproduced below, are the subject matter on appeal.

1. A ball joint comprising in combination:

(i) an elongated shaft having an upper end and a lower end and having a longitudinal axis running through said upper end and said lower end, said elongated shaft being threaded on the lower end;

(ii) a ball rigidly fixed and surmounted on the upper end of the elongated shaft, said ball, at the highest point opposite the upper end of the elongated shaft, having a truncated flat face;

(iii) a retaining member having an upper surface and a lower end, said retaining member having a lubricating port located in the upper surface thereof, the lubricating port being openly connected to a duct, said duct providing a passageway for lubricants from the lubricating port to the truncated flat face of the ball, said retaining member being externally threaded on the retaining member lower end;

(iv) a housing having an outside surface, a middle portion, and a lower end, said housing being internally conformed at the lower end of the housing to seat the ball

and provide pivotal movement about the longitudinal axis of the elongated shaft for the ball relative to the housing, said middle portion of the housing being internally threaded to receive the retaining member therein and said middle portion having a means for attaching the housing to a support arm of a suspension system;

(v) a fastening means for fastening the retaining member in the housing.

4. A ball joint as claimed in claim 1 wherein the means for attaching the housing to the support arm of the suspension system is external threads on the external surface of the middle portion of the housing.

8. A ball joint as claimed in claim 1 wherein the internally conformed lower end of the housing comprises plural shallow channels for receiving lubrication therein.

THE REJECTIONS

The Examiner relies upon the following as evidence in support of the rejections:

Edwards	US 2,559,857	Jul. 10, 1951
Scheublein, Jr.	US 2,954,993	Oct. 4, 1960
McEowen	US 4,134,701	Jan. 16, 1979
Mizusawa	US 4,568,216	Feb. 4, 1986
Maughan	US 5,564,853	Oct. 15, 1996

The following rejections are before us for review.

1. Claim 1 is rejected under 35 U.S.C. § 103(a) as unpatentable over Mizusawa in view of Edwards.

2. Claim 8 is rejected under 35 U.S.C. § 103(a) as unpatentable over Mizusawa in view of Edwards, and further in view of McEowen.
3. Claims 1 and 4 are rejected under 35 U.S.C. § 103(a) as unpatentable over Scheublein, Jr. in view of Maughan.²

ISSUE

The issue before us is whether Appellant has shown that the Examiner erred in rejecting the following claims under 35 U.S.C. § 103(a): (1) claim 1 as unpatentable over Mizusawa in view of Edwards; (2) claim 8 as unpatentable over Mizusawa in view of Edwards, and further in view of McEowen; and (3) claims 1 and 4 as unpatentable over Scheublein, Jr. in view of Maughan. The correctness of the obviousness rejections turns on whether the asserted references are properly combined and whether, when combined, they yield the claimed invention.

Rather than repeat the arguments of Appellant and the Examiner, we make reference to the Briefs and the Answer for their respective details. Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2004).

² On page 5 of the Answer, the Examiner withdrew U.S. Patent number 3,103,377 to Scheublein, Jr., et al. from the rejection of claims 1 and 4 because, although listed in the final rejection mailed on October 21, 2004, the Examiner did not rely on the deleted reference to teach any missing element or to support the rationale for combining Scheublein, Jr. and Maughan.

FINDINGS OF FACT

We find the following enumerated findings to be supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427, 7 USPQ2d 1152, 1156 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. As shown in Figure 6, Mizusawa discloses a ball joint comprising an elongated shaft, a ball 2, a retaining member 20, a housing 6, and a fastening means (29 and interconnected threaded portions of 6 and 20) for fastening the retaining member 20 in the housing 6. The shaft 1 has an upper end, a lower end, and a longitudinal axis running through the upper end and the lower end. The shaft is threaded on the lower end. The ball 2 is rigidly fixed and surmounted on the upper end of the shaft 1. The ball 2, at a highest point opposite the upper end of the shaft 1, has a truncated flat face (Mizusawa, Fig. 6). The retaining member 20 is externally threaded, (Mizusawa, col. 5, ll. 61-64), on its lower end. The housing 6 has an outside surface, a middle portion, and a lower end. The housing 6 is internally conformed at the lower end of the housing 6. The middle portion of the housing 6 is internally threaded (Mizusawa, col. 5, l. 51-54). The middle portion includes externally threaded clamping screw 5 that provides a means for attaching the housing 6 to a support arm of a suspension system. (Mizusawa, Fig. 6).
2. Edwards discloses a lubricating port for insertion of lubrication into the bore of a ball joint (Edwards, col. 2, ll. 10-13, Fig. 1). Edwards teaches

the use of a seal for preventing foreign matter from working its way past the seal into the ball joint and includes a plurality of grooves which provide a passage for the extrusion of lubricant when additional grease is added via the lubricating port. Adding additional grease causes any dirt that has managed to enter the ball joint to be extruded via the grooves before it can cause any harm to the surfaces of the ball or seat (Edwards, col. 3, ll. 10-41). Figure 2 shows that the grooves provide a path for grease from the lubricating port to the face of the ball (Edwards, Fig. 2). Edwards further teaches an externally threaded connecting rod that extends from a housing containing a ball joint transversely of a vehicle (Edwards, col.1, l. 45 – col. 2, l. 5, Fig. 1).

3. McEowen teaches including lubrication grooves in the spherical bearing surface of the ball in a ball joint which form grease reservoirs in the bearing surface without introducing aberrations in the finished bearing surface (McEowen, col. 1, ll. 57-61, Fig. 9). McEowen further discloses grease grooves located in the internally conformed lower end of the housing (shown as the upper end because the Figures of McEowen are upside down relative to those of the Appellant's application) (McEowen, col. 3, l. 37 – col. 4, l. 2).
4. As shown in Figure 9, Scheublein, Jr. discloses a ball joint which may be used for the lower arm of a suspension system comprising an elongated shaft 94, a ball 100, a retaining member 127, and a housing (118, 119, and 120). The shaft has an upper end (nearest the ball), a lower end

(farthest from the ball), and a longitudinal axis running through the upper end and the lower end. The shaft 94 is threaded on the lower end. The ball 100 is rigidly fixed and surmounted on the upper end of the shaft 94 (Scheublein, Jr., Fig. 9). The retaining member 104 is externally threaded on the lower end of the member. A portion of the housing at 102 is internally threaded. Retaining member 104 is fastened to housing 91 via engagement of the external threads on retaining member 104 with corresponding internal threads on the upper portion of housing 91 at 102. The housing 91 has an outside surface, a middle portion, and a lower end 92. The housing 91 is internally conformed at the lower end 92 of the housing 91 for seating the ball. Scheublein, Jr. further discloses external threads 95 on the external surface of the middle portion of the housing to attach the ball joint to an arm of the system (Scheublein, Jr., col. 5, ll. 53-55, Fig. 9). The member 104 has lubricating port 106 located in the upper surface thereof. The lubricating port is openly connected to a duct 107 providing a passageway to the top of the ball (Scheublein, Jr., Fig. 9). Figure 7 shows an alternate arrangement wherein ball 129 has a truncated flat face (Scheublein, Jr., Fig. 7).

5. Maughan teaches a fastening means 260 and 262 for fastening a retaining member 244 in a housing 208 (Maughan, Fig, 8).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the

subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). *See also KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *id.* at 1739, 82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *KSR*, 127 S.Ct. at 1739, 82 USPQ2d at 1395 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 12, 148 USPQ 459, 464 (1966) (emphasis added)), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* The Court explained:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations

of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 1740, 82 USPQ2d at 1396. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

The Supreme Court stated that there are “[t]hree cases decided after *Graham* [that] illustrate the application of this doctrine.” *Id.* at 1739, 82 USPQ2d at 1395. “In *United States v. Adams*, ... [t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *Id.* at 1739-40, 82 USPQ2d at 1395. “*Sakraida and Anderson’s-Black Rock* are illustrative – a court must ask whether the improvement is more than the predictable use of prior art elements according to their established function.” *Id.* at 1740, 82 USPQ2d at 1396.

The Supreme Court stated that “[f]ollowing these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement.” *Id.* The Court explained,

Often, it will be necessary for a court to look to

interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 1740-41, 82 USPQ2d at 1396. The Court noted that “[t]o facilitate review, this analysis should be made explicit.” *Id.* (citing *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). However, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.*

The Federal Circuit recently concluded that it would have been obvious to combine (1) a mechanical device for actuating a phonograph to play back sounds associated with a letter in a word on a puzzle piece with (2) an electronic, processor-driven device capable of playing the sound associated with a first letter of a word in a book. *Leapfrog Ent., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161, 82 USPQ2d 1687, 1690-91 (Fed. Cir. 2007) (“[a]ccommodating a prior art mechanical device that accomplishes [a desired] goal to modern electronics would have been reasonably obvious to one of ordinary skill in designing children’s learning devices”). In reaching that conclusion, the Federal Circuit recognized that

“[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.” *Id.* at 1161, 82 USPQ2d at 1690-91 (citing *KSR*, 127 S.Ct. 1727, 1739, 82 USPQ2d 1385, 1395 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”)). The Federal Circuit relied in part on the fact that Leapfrog had presented no evidence that the inclusion of a reader in the combined device was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Id.* (citing *KSR*, 127 S.Ct. at 1740-41, 82 USPQ2d at 1396).

ANALYSIS

A. Rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Mizusawa in view of Edwards.

Appellant argues that “[t]he references that the Examiner relies on deal with ball joints in which the balls are held in the housing using mechanical means while the device of the instant invention does not use mechanical means to hold the ball in the housing, but instead, uses the pressure of lubricating grease to maintain the ball in the housing” (Br. 3). Appellant asserts that the Specification teaches that the lubrication port not only is the means for adding lubricants to the open space formed by the truncated ball, but also is a means of holding the ball in the housing without mechanical means (Br. 4). However, Appellant’s argument is inapposite,

because there are no limitations of the disputed claims directed to “using the pressure of lubricating grease to maintain the ball in the housing.”

Appellant further argues that one of skill in the art would not combine Mizusawa and Edwards, because Mizusawa teaches a ball joint that has its major parts manufactured from plastic and claims the use of plastic in certain parts (Br. 4). Appellant incorrectly asserts that Mizusawa teaches ball joints predominantly used in gas-spring joints in the rear doors of automobiles (*Id.*). The passage cited by Appellant, (Mizusawa, col. 1, ll. 62-64), is actually in the background of the invention section and refers to prior art ball joints made with plastic sockets, which frequently led to accidental separation of the balls from their plastic sockets (Mizusawa, col. 1, l. 55 – col. 2, l. 4). Mizusawa does teach making the main body of the socket out of plastic, (Mizusawa, col. 2, ll. 23-27), but the teaching that plastic sockets are prone to separation would lead one of skill in the art to consider other materials, including metal, for applications in which the brittleness of plastic sockets would not perform acceptably for the given application as Appellant argues is the case for automobile suspension systems. Thus, Mizusawa does not teach away from the use of metal in a ball and socket arrangement for applications where the strength of metal is needed. One of skill in the art would know that if metal parts are substituted for plastic to meet strength requirements, which is a matter of design choice, lubrication would be needed. Moreover, the material of the various parts is not a claim limitation of the disputed claims.

The Examiner correctly found that all of the limitations of claim 1 are shown in Mizusawa except a means for lubricating, which is found in Edwards. One of

skill in the art would have been able to combine the lubrication port of Edwards with the ball joint of Mizusawa using methods known in the art at the time the invention was made. Moreover, each of the elements of Mizusawa and Edwards combined by the Examiner performs the same function when combined as it does in the prior art. Thus, such a combination would have yielded predictable results. *See Sakraida*, 425 U.S. at 282, 189 USPQ at 453.

Claim 1 was a combination which only unites old elements with no change in their respective functions and which yields predictable results. Thus, the claimed subject matter likely would have been obvious under *KSR*. In addition, neither Appellant's Specification nor Appellant's arguments present any evidence that the addition of a lubrication port to a ball joint is uniquely challenging or difficult for one of ordinary skill in the art. Moreover, the lubrication port of Edwards is a technique that has been used to improve one device (the ball joint of Edwards), and one of skill in the art would recognize that it would improve similar devices in the same manner. Because Appellant has not shown that the application of the Edwards lubrication port to the ball joint of Mizusawa would have been beyond the skill of one of skill in the art, we find using the technique would have been obvious. Under those circumstances, the Examiner did not err in holding that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the ball joint of Mizusawa with a lubrication port, as taught by Edwards, to lubricate the ball joint. Because this is a case where the improvement is no more than the predictable use of prior art elements according to

their established functions, no further analysis was required by the Examiner.
KSR, 127 S.Ct. at 1740, 82 USPQ2d at 1396.

B. Rejection of claim 8 under 35 U.S.C. § 103(a) as unpatentable over Mizusawa in view of Edwards, and further in view of McEowen.

Appellant does not disagree with Examiner that McEowen shows shallow channels in the lower end of the housing used as grease reservoirs as required by claim 8 (Br. 5). The only argument against this rejection is a restatement of the above objections to the combination of Mizusawa in view of Edwards, (*Id.*), which fails here for the same reasons it did with respect to the rejection of claim 1.

C. Rejection of claims 1 and 4 under 35 U.S.C. § 103(a) as unpatentable over Scheublein, Jr. in view of Maughan.

With respect to claim 1, Appellant reasserts the argument against the combination of Mizusawa in view of Edwards. Those arguments are inapposite because this rejection relies on neither Mizusawa nor Edwards.

Appellant further argues that Scheublein, Jr. does not provide a reason for the truncated flat face of the ball and “[f]rom Appellant's perspective, it ‘appears’ that the truncated flat face is sufficient to receive lubricant for lubrication purposes only” (Br. 6). Because claim 1 requires only “the lubricating port being openly connected to a duct, said duct providing a passageway for lubricants from the lubricating port to the truncated flat face of the ball,” Scheublein, Jr. meets the disputed claim limitation. Appellant’s argument is not directed to a specific limitation in the claim, and thus cannot distinguish the claim over the prior art.

With respect to claim 4, Examiner correctly found that Scheublein, Jr. discloses “the attaching means 95 is external threads on an external surface of the middle portion A14 of the housing 91” (Answer 7) (citing Scheublein, Jr., col. 5, lines 53-55). Appellant concedes that Scheublein, Jr. and Maughan “seem to deal with the use of external threads on the external surface of the middle portion of the housing for attachment means for the device” (Br. 6).

The Examiner found that Scheublein, Jr. teaches all of the limitations of claims 1 and 4 except for a fastening means for fastening the retaining member 104 in the housing 91 (Answer 5-6). Examiner found that “Maughan teaches, in Figure 8, a ball joint comprising a fastening means 260, 262 for fastening a retaining member 244 in a housing 208 . . . (col. 7, lines 61-62)” (Answer 6). We agree with the Examiner that the cited references disclose each of the limitations of claims 1 and 4 of the instant application.

One of skill in the art would have been able to combine the fastening means of Maughan with the ball joint of Scheublein, Jr. using methods known in the art at the time the invention was made. Moreover, each of the elements of Scheublein, Jr. and Maughan combined by the Examiner performs the same function when combined as it does in the prior art. Thus, such a combination would have yielded predictable results. *See Sakraida v. Ag Pro, Inc.* 425 U.S. 273, 282, 189 USPQ 449, 453 (1976).

Claim 1 and 4 were combinations which only unite old elements with no change in their respective functions and which yield predictable results. Thus, the claimed subject matter likely would have been obvious under *KSR*. In addition,

neither Appellant's Specification nor Appellant's arguments present any evidence that the addition of a fastening means for fastening a retaining member to a housing of a ball joint is uniquely challenging or difficult for one of ordinary skill in the art. Moreover, the fastening means of Maughan is a technique that has been used to improve one device (the ball joint of Maughan), and one of skill in the art would recognize that it would improve similar devices in the same manner.

Because Appellant has not shown that the application of the Maughan fastening means to the ball joint of Scheublein, Jr. would have been beyond the skill of one of skill in the art, we find using the technique would have been obvious. Under those circumstances, the Examiner did not err in holding that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the ball joint of Scheublein, Jr. with a fastening means, as taught by Maughan, for the purpose of fastening the retaining member in the housing of the ball joint. Because this is a case where the improvement is no more than the predictable use of prior art elements according to their established functions, no further analysis was required by the Examiner. *KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396.

CONCLUSIONS

We conclude that Appellant has not shown that the Examiner erred in rejecting claims 1, 4, and 8 under 35 U.S.C. § 103(a).

Appeal 2007-1792
Application 10/050,834

DECISION

The decision of the Examiner to reject claims 1, 4, and 8 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

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